

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all previous versions, and listing, of claims in this application.

1. (Currently Amended) A method comprising:

encoding data bits represented by multi-level analog signals comprising more than two analog amplitude levels;

transmitting the encoded data bits over at least two multi-level signal buses between a transmitter and a receiver such that, on each multi-level signal bus, during each data bit period the signal level is required to change from a first signal level to a second, different signal level; and

indicating a data boundary to the receiver by holding one of the multi-level signal buses at the same level for at least two consecutive bit periods, wherein the data boundary comprises one of a start or an end of a multi-bit frame.

2. (Previously Presented) The method as in claim 1, where encoding includes, when a data bit to be encoded is the same as the data bit encoded for an immediately prior bit period, encoding instead a strobe signal represented by a predetermined one of the levels of the multi-level analog signal, where the presence of the strobe signal at the receiver is used to generate a clock edge.

3. (Currently Amended) The method as in claim 2, where the multi-level analog signal comprises a 3-level pulse amplitude modulation (~~PAM-3~~) signal, where two analog signal levels convey the encoded data bits and a third analog signal level conveys the strobe signal.

4. (Canceled)

5. (Currently Amended) The method as in ~~claim 4~~ claim 1, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between the transmitter and the receiver.

6. (Currently Amended) The method as in ~~claim 4~~claim 1, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a control unit of a mobile station and a display of the mobile station.

7. (Currently Amended) The method as in ~~claim 4~~claim 1, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a control unit of a mobile station and a camera of the mobile station.

8. (Previously Presented) The method as in claim 1, further comprising transmitting a stream of data between the transmitter and the receiver by toggling one of the at least two multi-level signal buses between first and second signal levels to generate clock edges, and setting, so as to coincide with a generated clock edge, a signal level of another one of the at least two multi-level signal buses at a signal level representative of a logic zero signal level or a logic one signal level.

9. (Previously Presented) The method as in claim 8, where the receiver of the stream of data performs toggling the one of the at least two multi-level signal buses between the first and the second signal levels to generate clock edges.

10. (Previously Presented) The method as in claim 8, where a beginning and an end of the stream of data is signaled by setting at least one of the different signal buses to a third signal level.

11. (Currently Amended) An apparatus comprising:

- a transmitter configured to encode data bits represented by multi-level analog signals comprising more than two analog amplitude levels;

- at least two multi-level signal buses coupled between said transmitter and a receiver configured to convey the encoded data bits such that, on each multi-level signal bus, during each data bit period the signal level is required to change from a first signal level to a second, different signal level; and

- said transmitter configured to indicate a data boundary to said receiver by holding one of the multi-level signal buses at the same level for at least two consecutive bit periods, wherein the data boundary comprises one of a start or an end of a multi-bit frame.

12. (Previously Presented) The apparatus as in claim 11, where said transmitter operates to encode data bits such that, when a data bit to be encoded is the same as the data bit encoded for an immediately prior bit period, the transmitter instead encodes a strobe signal represented by a predetermined one of the levels of the multi-level analog signal, where the presence of the strobe signal at said receiver is used to generate a clock edge.

13. (Currently Amended) The apparatus as in claim 12, where the multi-level analog signal comprises a 3-level pulse amplitude modulation (~~PAM-3~~) signal, where two analog signal levels convey the encoded data bits and a third analog signal level conveys the strobe signal.

14. (Canceled)

15. (Currently Amended) The apparatus as in ~~claim 14~~ claim 11, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between said transmitter and said receiver.

16. (Currently Amended) The apparatus as in ~~claim 14~~ claim 11, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a control unit of a mobile station and a display of the mobile station.

17. (Currently Amended) The apparatus as in ~~claim 14~~ claim 11, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a control unit of a mobile station and a camera of the mobile station.

18. (Previously Presented) The apparatus as in claim 11, where said transmitter and said receiver cooperate to transmit a stream of data by toggling one of the at least two multi-level signal buses between first and second signal levels to generate clock edges, and by setting, so as to coincide with a generated clock edge, a signal level of another one of the at least two multi-level signal buses at a signal level representative of a logic zero signal level or a logic one signal level.

19. (Previously Presented) The apparatus as in claim 18, where said receiver of the stream of data toggles the one of the at least two multi-level signal buses between the first and the second signal levels to generate clock edges.

20. (Previously Presented) The apparatus as in claim 18, where a beginning and an end of the stream of data is signaled by setting at least one of the different signal buses to a third signal level.

21. (Currently Amended) A mobile station comprising:

a plurality of sub-assemblies coupled together by a plurality of data communication buses connected to ports, where at least one port comprises a ~~Multi-level Analog Signaling~~ multi-level analog signaling circuit arrangement comprising a transmitter to encode data bits represented by multi-level analog signals comprising more than two analog amplitude levels;

where a data communications bus that couples the transmitter to a receiver in another port comprises at least two multi-level signal buses for conveying the encoded data bits such that, on each multi-level signal bus, during each data bit period the signal level is required to change from a first signal level to a second, different signal level; and

said transmitter indicating a data boundary to said receiver by holding one of the multi-level signal buses of the at least two multi-level signal buses at the same level for at least two consecutive bit periods, wherein the data boundary comprises one of a start or an end of a multi-bit frame.

22. (Previously Presented) The mobile station as in claim 21, where said transmitter operates to encode data bits such that, when a data bit to be encoded is the same as the data bit encoded for an immediately prior bit period, the transmitter instead encodes a strobe signal represented by a predetermined one of the levels of the multi-level analog signal, where the presence of the strobe signal at said receiver is used to generate a clock edge.

23. (Currently Amended) The mobile station as in claim 22, where the multi-level analog signal comprises a 3-level pulse amplitude modulation (~~PAM-3~~) signal, where two analog signal levels convey the encoded data bits and a third analog signal level conveys the strobe signal.

24. (Canceled)

25. (Currently Amended) The mobile station as in claim 24 21, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between said transmitter and said receiver.

26. (Currently Amended) The mobile station as in claim 24 21, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a cellular engine of said mobile station and a display of said mobile station.

27. (Currently Amended) The mobile station as in claim 24 21, where the multi-bit frame comprises at least 24 bits for conveying 8-bit Red, Green and Blue data between a cellular engine of said mobile station and a camera of said mobile station.

28. (Previously Presented) The mobile station as in claim 21, where said transmitter and said receiver cooperate to transmit a stream of data by toggling one of the at least two multi-level signal buses between first and second signal levels to generate clock edges, and by setting, so as to coincide with a generated clock edge, a signal level of another one of the at least two multi-level signal buses at a signal level representative of a logic zero signal level or a logic one signal level.

29. (Previously Presented) The mobile station as in claim 28, where said receiver of the stream of data toggles the one of the at least two multi-level signal buses between the first and the second signal levels to generate clock edges.

30. (Previously Presented) The mobile station as in claim 28, where a beginning and an end of the stream of data is signaled by setting at least one of the different signal buses to a third signal level.

31. (Previously Presented) The mobile station as in claim 21, where one of said sub-assemblies comprises a cellular engine that is coupled to circuitry external to said mobile station via another port and data communications bus.

32. (Currently Amended) Circuitry comprising: ~~transmitter means comprising means for a transmitter configured to encode~~ encoding data bits represented by multi-level analog signals comprising more than two analog amplitude levels;

at least two multi-level signal buses ~~bus means coupled~~ configured to interface between said transmitter ~~means~~ and a receiver configured to convey ~~means for conveying~~ the encoded data bits such that, on each multi-level signal bus ~~means~~, during each data bit period the signal level is required to change from a first signal level to a second, different signal level; said transmitter ~~means indicating~~ configured to indicate a data boundary to said receiver means by holding one of the multi-level signal buses at the same level for at least two consecutive bit periods, wherein the data boundary comprises one of a start or an end of a multi-bit frame.

33. (Currently Amended) The circuitry as in claim 32, where ~~said encoding~~ the transmitter is configured ~~means operates to encode~~ the data bits such that, when a data bit to be encoded is the same as the data bit encoded for an immediately prior bit period, said transmitter ~~encoding means~~ instead encodes a strobe signal represented by a predetermined one of the levels of the multi-level analog signal, where the presence of the strobe signal at said receiver ~~means~~ is used to generate a clock edge.

34. (Currently Amended) The circuitry as in claim 33, where the multi-level analog signal comprises a 3-level pulse amplitude modulation (~~PAM-3~~) signal, where two analog signal levels convey the encoded data bits and a third analog signal level conveys the strobe signal.

35. (New) An apparatus comprising:

encoding means for encoding data bits represented by multi-level analog signals comprising more than two analog amplitude levels; and

at least two multi-level signal bus means between said encoding means and receiver means for conveying the encoded data bits such that, on each multi-level signal bus, during each

data bit period the signal level is required to change from a first signal level to a second, different signal level;

where said encoding means is for indicating a data boundary to said receiver means by holding one of the multi-level signal buses at the same level for at least two consecutive bit periods, wherein the data boundary comprises one of a start or an end of a multi-bit frame.